Plant and Soil

INTERNATIONAL JOURNAL OF PLANT NUTRITION,
PLANT CHEMISTRY, SOIL MICROBIOLOGY AND
SOIL-BORNE PLANT DISEASES

VOLUME 41

THE HAGUE
MARTINUS NIJHOFF
1974

Per.
SB13
P55

© 1974 by Martinus Nijhoff, The Hague, Holland
All rights reserved, including the right to translate or to reproduce this journal or parts thereof in any form

PRINTED IN THE NETHERLANDS

CONTENTS — TABLE DES MATIÈRES — INHALT

PAGE

A. A. Abdel-Rahman and H. M. El-Sharkawi, Response of olive and almond orchards to partial irrigation under dry-farming practices in semi-arid regions. II. Plant-soil water relations in olive during the growing season 13

J. van Andel and J. Rozema, *Short communication.* An experiment on reproduction from seed within existing populations of *Chamaenerion angustifolium* (L) Scop . . . 415

K. A. Balasubramanian, Role of date of seeding, soil moisture, temperature and pH in the incidence of downy mildew of sorghum 233

L. Batistic, Les acides aromatiques et volatils dans les sols . 73

R. T. Besford and G. A. Maw, Uptake and distribution of potassium in tomato plants 601

K. K. S. Bhat and P. H. Nye, Diffusion of phosphate to plant roots in soil. II. Uptake along the roots at different times and the effect of different levels of phosphorus 365

K. K. S. Bhat and P. H. Nye, Diffusion of phosphate to plant roots in soil. III. Depletion around onion roots without root hairs 383

Lars Christersson, Seasonal ionic fluctuations and annual growth rates in stands of *Pinus silvestris* L. and *Picea abies* Karst. (L) 343

A. C. P. Chu and A. G. Robertson, The effects of shading and defoliation on nodulation and nitrogen fixation by white clover 509

J. F. Dormaar, Molecular-sieve chromatography of humic substances extracted with chelating resin from chernozemic Ah horizons 51

H. S. Dungarwal, P. N. Mathur and H. G. Singh, *Short communication.* Comparative efficacy of sulphuric acid and sequestrene 138Fe foliar sprays in the prevention of chlorosis in corn (*Zea mays*, L.) 207

D. G. Edwards and C. J. Asher, The significance of solution flow rate in flowing culture experiments. 161

W. H. Eppendorfer and S. W. Bille, Amino acid composition as a function of total-N in pea seeds grown on two soils with P and K additions. 33

J. C. L. Fardeau and E. Triboi, Mesure au champ du phosphore disponible "L" 293

C. T. Gates and J. R. Wilson, The interaction of nitrogen and phosphorus on the growth, nutrient status and nodulation of *Stylosanthes humilis* H.B.K. (townsville stylo) . 325

M. F. Ghoneim, M. H. El-Gibaly and H. G. Hassanin, The status of manganese in the soil and rice plants under different water systems and fertilizer applications 313

P. M. Giordano, J. C. Noggle and J. J. Mortvedt, Zinc uptake by rice as affected by metabolic inhibitors and competing cations 637

P. J. Goodman, D. M. Hughes, M. Fothergill and P. B. Ellis, Genetic variation in the activity of nitrate reductase and nitrite reductase in Lolium 435

A. Hartzook, D. Karstadt, M. Naveh and Nadav Sander, *Short communication.* Groundnut (*Arachis hypogaea* L.) cultivars for cultivation on calcareous soils 685

B. A. Hedge and G. V. Joshi, *Short communication.* Mineral salt absorption in saline rice variety, Kala Rata 421

Edmund Jay Holcomb and John W. White, Potassium fertilization of chrysanthemums using a constant-drip fertilzer solution 271

Bushan L. Jalali and D. Suryanarayana, *Short communication.* Organic acid spectrum of root exudates of wheat in relation to its root rot disease 425

A. KASHIRAD and H. MARSCHNER, Iron nutrition of sunflower and corn plants in mono and mixed culture 91

D. D. KULSHRESHTHA, A. K. SARBHOY, S. P. RAYCHAUDHURI and ABRAR M. KHAN, *Short communication*. A simple device for collecting root exudates for chromatographic studies . 195

D. W. KUSESKE, B. R. FUNKE and J. T. SCHULZ, Effects and persistence of Baygon (propoxur) and Temik (aldicarb) insecticides in soil 255

C. K. LABANAUSKAS, R. J. LUXMOORE and L. H. STOLZY, Soil temperature and soil aeration effects on protein and free amino acid concentrations in wheat grain 351

R. D. LAURA, Effects of neutral salts on carbon and nitrogen mineralisation of organic matter in soil 113

STIG LEDIN and LAMBERT WIKLANDER, Exchange acidity of wheat and pea roots in salt solutions 403

R. A. LEVIN and M. P. MONTGOMERY, Symbiotic effectiveness of antibiotic-resistant mutants of *Rhizobium japonicum* . . 669

C. MIGUEL and C. RODRIGUEZ-BARRUECO, Acetylene-reducing activity of detached root nodules of *Myrica faya* ait . . . 521

S. G. MISRA and PADMAKAR PANDE, *Short communication*. Evaluation of a suitable extractant for available nickel in soils 697

G. I. MOSS and M. L. HIGGINS, Magnesium influences on the fruit quality of sweet orange (*Citrus sinensis* L. Osbeck) . . 103

K. J. MULLETTE, NOLA J. HANNON and A. G. L. ELLIOTT, *Short communication*. Insoluble phosphorus usage by Eucalyptus 199

K. S. N. MURTY and B. V. MEHTA, *Short communication*. Studies on the fixation of zinc 215

C. MYTTENAERE and J. M. MOUSNY, The distribution of chromium-51 in low-land rice in relation to the chemical form and to the amount of stable chromium in the nutrient solution 65

V. E. Nash and V. C. Baligar, The growth of soybean (*Glycine max*) roots in relation to soil micromorphology 81

L. E. Nelson and R. Selby, The effect of nitrogen sources and iron levels on the growth and the composition of Sitka spruce and Scots pine 573

E. R. Page and A. Gerwitz, Mathematical models, based on diffusion equations, to describe root systems of isolated plants, row crops, and swards 243

J. J. Patel, Antagonism of actinomycetes against rhizobia . 395

C. Ll. Powell, Effect of P fertilizer on root morphology and P uptake of *Carex coriacea*. 661

B. S. Purchase, Evaluation of the claim that grass root exudates inhibit nitrification 527

B. S. Purchase, The influence of phosphate deficiency on nitrification 541

B. F. Quin and R. R. Brooks, Tungsten concentrations in plants and soils as a means of detecting cheelite-bearing ore-bodies in New Zealand 177

G. S. N. Raju and Asit K. Mukhopadhyay, Significance of the sequence of K^+ and NH^+_4 application for the availability of nitrogen to the rice plant 189

G. S. N. Raju and Asit K. Mukhopadhyay, Studies on availability of fixed NH_4^+ to nitrifying organisms 287

Pratap V. Rangnekar, Effect of calcium deficiency on the translocation and the utilization of C^{14}-photosynthate in tomato plants 589

J. D. Russell and H. A. Anderson, *Short communication.* Comment on 'Spectroscopie infra-rouge de quelques acides humiques' by J. R. Bailly 695

M. S. Sachdev and Pamila Chhabra, Transformation of S^{35}-labelled sulphate in aerobic and flooded soil conditions 335

A. Saeed Bhatti, *Short communication.* Treatment of cotton seeds for germination 681

A. J. Sánchez-Raya, A. Leal, M. Gómez-Ortega and L. Recalde, Effect of iron on the absorption and translocation of manganese 429

A. Siman, F. W. Cradock and A. W. Hudson, The development of manganese toxicity in pasture legumes under extreme climatic conditions 129

B. R. Singh, Migration of ions in soils. I. Movement of Zn^{65} from surface application of zinc sulphate in soil columns . . 619

B. R. Singh, Migration of ions in soils. II. Movement of Mn^{54} from surface application of manganese sulphate in soil columns 629

R. Singh and T. P. Mall, Studies on the nodulation and nitrogen fixation by infected leguminous plants. I. Effect of arhar mosaic virus infection on nitrogen value, nodulation and nitrogen fixation by some pulse crops 279

K. Sivaprakasam, K. Pillayarsamy and C. K. Soumini Rajagopalan, *Short communication.* Influence of nitrogen on the incidence of downy mildew disease of pearl millet (*Pennisetum typhoides* Staph & Hubb.) 677

K. W. Smilde, P. Koukoulakis and B. van Luit, Crop response to phosphate and lime on acid sandy soils high in zinc 445

L. L. Somani, J. S. Choudhari and S. N. Saxena, Studies on acid gradient elution of soil phosphates 223

Arnulv Stabursvik and Ola M. Heide, Protein content and amino acid spectrum of finger millet [*Eleusine coracana* (L.) Gaertn.] as influenced by nitrogen and sulphur fertilizers 549

R. J. Summerfield and J. O. Rieley, *Short communication.* Growth of *Narthecium ossifragum* in relation to the dissolved oxygen concentration of the rooting substrate 701

N. Thawornwong and A. van Diest, Influences of high acidity and aluminum on the growth of lowland rice 141

LILIAN ISOLDE THOMAZINI, *Short communication*. Mycorrhiza in plants of the 'Cerrado' 707

R. C. TIWARI and B. MOHAN KUMAR, *Short communication*. A common chemical extractant for estimating plant-available zinc in different soil types (peaty, red and alluvial) 689

I. T. TWYFORD and D. WALMSLEY, The mineral composition of the Robusta banana plant. II. The concentration of mineral constituents 459

I. T. TWYFORD and D. WALMSLEY, The mineral composition of the Robusta banana plant. III. Uptake and distribution of mineral constituents 471

I. T. TWYFORD and D. WALMSLEY, The mineral composition of the Robusta banana plant. IV. The application of fertilizers for high yields 493

GERMUND TYLER, Heavy metal pollution and soil enzymatic activity 303

M. G. VOLZ and L. JACOBSON, A specific calcium requirement for potassium uptake by excised vetch roots 647

A. WALLACE, R. T. ASHCROFT and R. T. MUELLER, *Short communication*. Effect of bicarbonate on xylem exudation from detopped tobacco and long-distance transport in intact plants 211

K. C. WILSON, Studies on the mineral nutrition of tea. I. Experimental methods 1

F. ZSOLDOS, Uptake and efflux of ions in fungicide-treated rice plants 41